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Pesticide Fact Sheet Number 114
Sodium Arsenate

(U.S.) Environmental Protection Agency
Washington, DC

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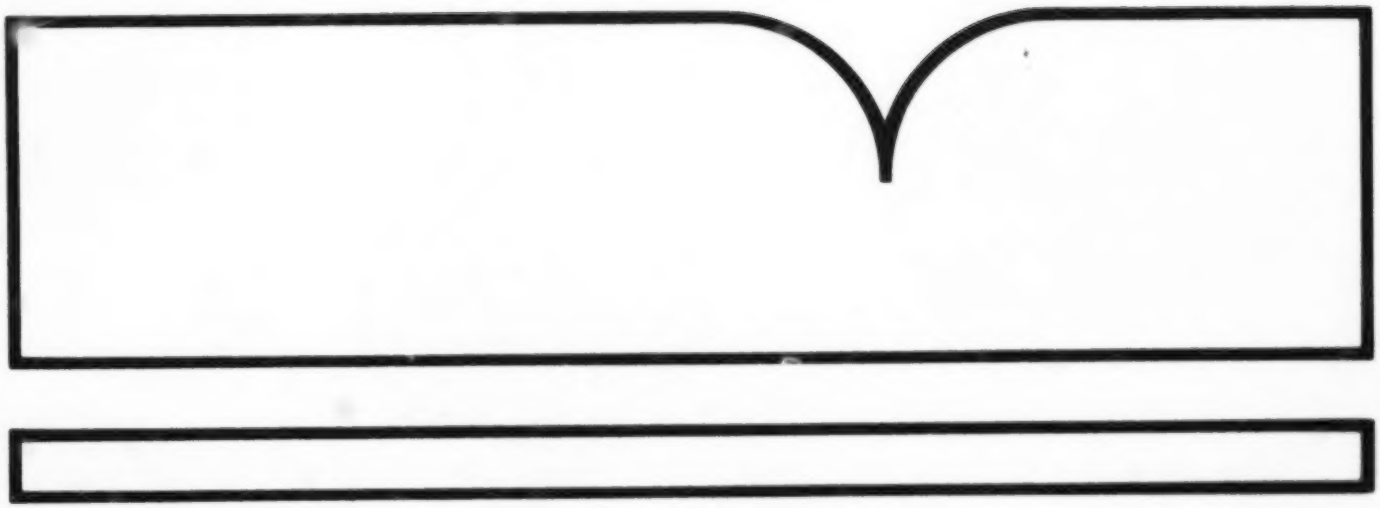

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16. Abstract (Limit: 200 words)

This document contains up-to-date chemical information, including a summary of the Agency's regulatory position and rationale, on a specific pesticide or group of pesticides. Fact Sheet is issued after one of the following actions has occurred.

1. Issuance or reissuance of a ration standard,
2. Issuance of each special rev. ument,
3. Registration of a significantly changed use pattern,
4. Registration of a new chemical, or
5. An immediate need for information to resolve controversial issues relating to a specific chemical or use pattern.

17. Document Analysis a. Descriptors

Pesticides, regulations, Chemical Information Fact Sheet, Use Patterns, Science Findings

b. Identifiers/Open-Ended Terms

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Washington, DC 20460

EPA

Pesticide Fact Sheet

Name of Chemical: Sodium arsenate
Reason for Issuance: Special review
Date Issued: December 1986
Fact Sheet Number: 114

1. DESCRIPTION OF CHEMICAL

Common Name: Sodium Arsenate

Chemical Name: Sodium Orthoarsenate - $Na_2HAsO_4.7H_2O$

Trade Names: None

EPA Shaughnessy Code: 013505

Chemical Abstracts Service (CAS) Number: 7778-43-0

Year of Initial Registration:

Pesticide Type: Insecticide

Chemical Family: Inorganic Arsenicals

U.S. and Foreign Producers: Osmose Wood Pres. Company of America, Inc.

2. USE PATTERNS AND FORMULATIONS

Sodium arsenate is currently registered for use as an ant bait. These baits are used in approximately 1% of U.S. homes.

- Methods of Application: Liquid bait applied where ants are seen. Applied as a bait station using cardboard, waxpaper, cotton, or bottle caps; or apply directly across ant trails and at entry points as a thin line 3 to 4 inches long.
- Application Rates: Insecticide- The bait used is a 1.3% arsenic (metal) solution.

Types of Formulations: Ready to use solution, granular.

3. SCIENCE FINDINGS

° Chemical Characteristics

Sodium arsenate is a pentavalent form of inorganic arsenic. It is a heptahydrate which normally exists as colorless crystals with no discernible odor. Sodium arsenate contains 24% arsenic and is soluble in 5.6 gm at 0°C and 100 gm at 100°C in 100 cc of water, soluble in glycerol and slightly soluble in alcohol. The melting point of calcium arsenate is 130°C , the density is 1.88 and the molecular weight is 312.01. The technical chemical contains 98% and the formulations contain from 0.92% to 3.08% sodium arsenate.

° Toxicological Characteristics

Inorganic arsenical compounds have been classified as Class A oncogens, demonstrating positive oncogenic effects based on sufficient human epidemiological evidence.

Inorganic arsenicals have been assayed for mutagenic activity in a variety of test systems ranging from bacterial cells to peripheral lymphocytes from humans exposed to arsenic. The weight of evidence indicates that inorganic arsenical compounds are mutagenic.

Evidence exists indicating that there is teratogenic and fetotoxic potential based on intravenous and intraperitoneal routes of exposure; however, evidence by the oral route is insufficient to confirm sodium arsenate's teratogenic and fetotoxic effects.

Inorganic arsenicals are known to be acutely toxic. The symptoms which follow oral exposure include severe gastrointestinal damage resulting in vomiting and diarrhea, and general vascular collapse leading to shock, coma and death. Muscular cramps, facial edema, and cardiovascular reactions are also known to occur following oral exposure to arsenic.

° Environmental Characteristics: The environmental fate of sodium arsenate is not well documented. Studies to demonstrate its fate must take into account the fact that inorganic arsenicals are natural constituents of the soil, and that forms of inorganic arsenic may change depending on environmental conditions. Based on very limited data sodium arsenate is not predicted to leach significantly.

° Ecological Characteristics: Sodium arsenate is moderately toxic to birds, slightly toxic to fish and moderately toxic to aquatic invertebrate species.

- Metabolism: The metabolism of inorganic arsenic compounds in animals is well known. The pentavalent form, such as sodium arsenate, is metabolized by reduction into the trivalent form, followed by transformation into organic forms which are excreted within several days via the urine. All animals exhibit this metabolism except rats, which retain arsenic in their bodies for up to 90 days.

- Tolerance Assessment: A tolerance for residues of the insecticide sodium arsenate on grapes was established at 3.5 ppm in 40 CFR 180.196.

- Reported Pesticide Incidents: The Agency's Pesticide Incident Monitoring System (PIMS) contains many recorded incidents of accidental poisonings from the use of sodium arsenate baits. 190 children were involved in 186 reported incidents; five of these children died and 43 were hospitalized.

4. SUMMARY OF REGULATORY POSITION AND RATIONALE

The Agency is proposing to cancel all existing nonwood registrations of sodium arsenate. Based upon the risk of acute toxicity poisonings and the other toxicological characteristics described above the Agency has determined that in light of the limited benefits for nonwood uses of sodium arsenate the risks of continued use outweigh the benefits.

- Benefits Analysis: No economic impact is expected as a result of cancellation of this use. Comparatively priced alternatives are available.

5. CONTACT PERSON

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